



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,744	08/28/2003	Tatsuyuki Okuno	031090	5722
23850	7590	05/17/2007		
ARMSTRONG, KRATZ, QUINTOS, HANSON & BROOKS, LLP 1725 K STREET, NW SUITE 1000 WASHINGTON, DC 20006			EXAMINER OLSEN, KAJ K	
			ART UNIT 1753	PAPER NUMBER
			MAIL DATE 05/17/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

c

Office Action Summary	Application No. 10/649,744	Applicant(s) OKUNO, TATSUYUKI	
	Examiner Kaj K. Olsen	Art Unit 1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 2 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1 is/are allowed.
- 6) ☒ Claim(s) 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al (USP 5,814,719) in view of either Bhagat et al (USP 4,668,374) or Kojima et al (USP 6,007,688).

3. Suzuki discloses a limit current type sensor comprising a patterned cathode layer 2, a patterned anode layer 4 and a patterned solid electrolyte layer 3 disposed in between the cathode and anode. Suzuki further discloses a plane porous diffusion layer 1 for controlling the gaseous diffusion rate on the other surface of the cathode layer. See fig. 1 and 3 and col. 3, ll. 12-19.

The cathode layer of Suzuki is shown in fig. 3 to have a portion that sticks out from the electrolyte layer 3 and connects to an external lead wire 5. The portion of that layer that is exposed to the gas environment (i.e. atmosphere) and is covered with a portion of the solid electrolyte layer would read on the applicant's defined bonding pad portion. Suzuki does not disclose the presence of a patterned gas barrier film. Bhagat discloses that the portions of an electrode that are not directly connected to the electrolyte should be shielded from gas contact by a gas barrier film 93 such that all electrolytic activity occurs at the defined contact between the electrode and the electrolyte. See fig. 10 and col. 13, ll. 22-33. Kojima also discloses that the lead portions of the electrode should be covered with a gas tight layer 92 to prevent the lead

Art Unit: 1753

portions of the electrodes from functioning as electrodes. See fig. 7 and col. 9, ll. 23-32. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to cover the bonding portion of Suzuki with a patterned gas barrier film such that this bonding portion does not function as an electrode. Moreover, because the function of the gas barriers is to control how and where gas diffusion is to occur (i.e. the diffusion of gas is to occur at other locations of the sensor), one possessing ordinary skill in the art would recognize that the exposed portion of the cathode 2 of Suzuki would not be diffusion limited by the desired diffusion element 1 and would have been motivated, in view of Bhagat and Kojima, to place a gas barrier at this bonding portion.

4. Applicant has amended claim 2 to specify that the patterned gas barrier film is disposed on the exterior surface of the bonding pad and on the exterior surface of the patterned solid electrolyte layer. This would have been obvious in view of the already cited art. In particular, the bonding pad of Suzuki extends all the way to the solid electrolyte. See fig. 3. One possessing ordinary skill in the art would have recognized that any gas barrier film from Bhagat or Kojima would have needed to extend along the bonding pad all the way to edge of the solid electrolyte layer. In particular, note that Kojima teaches that the barrier film 92 extends all the way to the edge of layer 91 in fig. 7 in order to provide complete protection for the lead. If the gas barrier film of Bhagat or Kojima were to extend over the bonding pad of Suzuki all the way to the edge of electrolyte 3, then the gas barrier film would be disposed on an exterior surface of the bonding pad and on an exterior surface (i.e. an edge) of the solid electrolyte layer at a boundary between the solid electrolyte layer and the bonding pad, thereby meeting the new claim limitations. Moreover, even if the examiner were to interpret these new limitations as requiring

Art Unit: 1753

the barrier film to actually extend over the electrolyte beyond the boundary area (like fig. 9B shows), one possessing ordinary skill in the art would have been motivated to extend the barrier up the surface of the electrolyte as well to both improve the sealing of the bonding pad (i.e. so as to not leave a leakable seam right at the edge of the electrolyte and bonding pad) as well as to prevent gas leakage through the solid electrolyte as well. As discussed in the previous office action and above, current flow through the cathode is supposed to diffusion limited by substrate

1. See Suzuki, col. 3, ll. 40-47. A barrier extending up the solid electrolyte would have prevented any current flow induced by gas leaking through the solid electrolyte layer.

Response to Arguments

5. Applicant's arguments filed 3-14-2007 have been fully considered but they are not persuasive. Applicant urges that the amended claim 2 reads free of the relied on prior art. The examiner disagrees for the reasons set forth above.

Allowable Subject Matter

6. Claim 1 is allowed for the reasons set forth in the previous office action.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

Art Unit: 1753


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Friday from 8:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753
May 16, 2007


KAJ K. OLSEN
PRIMARY EXAMINER